Stormwater Technical Advisory Committee: Part II Discussion

May 18, 2006

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Department of Conservation & Recreation

CONSERVING VIRGINIA'S NATURAL & RECREATIONAL RESOURCES

• State Parks • Soil and Water Conservation • Natural Heritage
• Outdoor Recreation Planning • Land Conservation
• Dam Safety and Floodplain Management
• Chesapeake Bay Local Assistance

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Review of Preliminary Draft

- The text presented today reflects solid concepts that merit discussion.
- They do not constitute any final policy considerations and are subject to change.
- They present an approach that would improve water quality and quantity and would be beneficial to the environment.
- They are a test balloon on key issues to see if we are heading in the right direction.

Committee Charge

Develop, in coordination and cooperation with the Environmental Protection Agency, amendments to the Virginia Soil and Water Conservation Board's Virginia Stormwater Management Program (VSMP) Permit Regulations (§§ 4 VAC 50-60-10 et seq.) to address

- **the minimum water quality and quantity criteria** and administrative functions **that a local stormwater management program must contain** to receive program delegation by the Board for administration of the VSMP or portions thereof,
- administrative procedures by which the Board makes its delegation determinations,
- DCR program administration and oversight procedures, and
- revisions to the statewide stormwater permit fee schedule to a level sufficient to carry out the stormwater management program by localities and the Department.

EXISTING PART II LANGUAGE REVIEW

Part II Stormwater Management Program Technical Criteria

- **4VAC50-60-40. Applicability.**

  –Explains that this Part specifies the water quality (and soon water quantity) technical criteria for every stormwater management program and land-disturbing activity.

•4VAC50-60-50. General.

Specifies general stormwater management issues such as:

- –Flooding and channel erosion impacts to receiving streams shall be measured at each point of discharge,
- –Specifications for design storms,
- –Assumptions for computing runoff,
- –Compliance with all applicable laws and regulations,
- –Design standards for non-regulated impounding structures,
- –Pre-development and post-development runoff rates verification practices,
- –Discharge of outflows to an adequate channel,
- –Application of stormwater management criteria to the land disturbance from proposed residential, commercial, or industrial subdivisions,
- –Need for inspection and maintenance plans for all stormwater management facilities,
- –Avoidance of stormwater management impoundment structure construction in designated 100-year floodplains,
- –Natural channel characteristics preservation,
- –Compliance with Erosion and Sediment Control Law and regulations, and
- –The siting of flood control and stormwater management facilities in Resource Protection Areas with specified provisions.

- **4VAC50-60-60. Water quality.**
  - Compliance with the water quality criteria may be achieved by applying performance-based criteria or technology-based criteria to either the site or a planning area.
- **4VAC50-60-70. Stream channel erosion.**
  - Establishes that properties and receiving waterways downstream of any land-disturbing activity shall be protected from erosion and damage due to changes in runoff rate of flow and hydrologic characteristics

- **4VAC50-60-80. Flooding.**
  - Establishes that downstream properties and waterways shall be protected from damages from localized flooding due to changes in runoff rate of flow and hydrologic characteristics, including but not limited to, changes in volume, velocity, frequency, duration, and peak flow
- **4VAC50-60-90. Regional (watershed-wide) stormwater management plans.**
  - This section enables localities to develop regional stormwater management plans.
  - The objective of a regional stormwater management plan is to address the stormwater management concerns in a given watershed with greater economy and efficiency by installing regional stormwater management facilities versus individual, site-specific facilities. The result will be fewer stormwater management facilities to design, build and maintain in the affected watershed.

OVERVIEW OF PART II AMENDMENTS

- Review of Part II concepts advanced at the last meeting – See Minutes

Part I Definitions

- “Environmentally Sensitive Design
- “Low Impact Development or LID”
- “Maximum extent practicable”
- "Person" (revised)
- "Riparian buffer"
- “Stormwater management criteria”
- "Water quality volume" (revised)

"Environmentally Sensitive Design" means the use of planning tools that protect our natural and rural resource land, limit impervious surfaces, and concentrate new growth in existing population centers or suitable areas served by appropriate infrastructure. Such tools include but are not limited to the use of riparian buffers adjacent to environmentally sensitive features; better site design; erosion and sediment control; land conservation; land use planning; and programs that advance citizen environmental stewardship and pollution prevention.

"Low Impact Development or LID" means a design strategy with the goal of maintaining or replicating the pre-development hydrologic regime through the use of design techniques to create a functionally equivalent hydrologic site design. Hydrologic functions of storage, infiltration and ground water recharge, as well as the volume and frequency of discharges are maintained through the use of integrated and distributed micro-scale stormwater retention and detention areas, reduction of impervious surfaces, and the lengthening of runoff flow paths and flow time. Other strategies include the preservation/protection of environmentally sensitive site features such as riparian buffers, wetlands, steep slopes, valuable (mature) trees, flood plains, woodlands, and highly permeable soils.

"Maximum extent practicable or MEP" means a level of implementing stormwater practices and programs which achieve pollutant reductions and take into account the best available technology, cost effectiveness and other competing issues such as human safety and welfare, endangered and threatened resources, water quality and quantity, and geographic features. MEP allows flexibility in the way to meet the performance standards and may vary based on the performance standard and site conditions.

"Riparian buffer" means an area of trees, shrubs, grasses, or combination thereof that is (i) at least thirty-five feet in width, (ii) adjacent to a body of water, and (iii) managed to maintain the integrity of stream channels and shorelines and reduce the effects of upland sources of pollution by trapping, filtering, and converting sediments, nutrients, and other chemicals.

“Stormwater management criteria” means the minimum standards of effectiveness for every stormwater management program and land-disturbing activity as setout in Part II of these regulations.

"Water quality volume" means the volume equal to the first ~~1/2~~ inch of runoff multiplied by the impervious surface of the land development project.

Part II Overview

Part II Stormwater Management Program Technical Criteria

4VAC50-60-40. Applicability.

4VAC50-60-50. General. Repeal

4VAC50-60-53. General Requirements

4VAC50-60-56. Applicability of other laws and regulations

4VAC50-60-60. Water quality. Repeal

4VAC50-60-63. Water Quality and Quantity

4VAC50-60-66. Runoff Characteristics

4VAC50-60-70. Stream channel erosion. Repeal

4VAC50-60-73. Frequency

4VAC50-60-76. Linear development projects

4VAC50-60-80. Flooding. Repeal

4VAC50-60-83. Stormwater management impoundment structure or facilities

4VAC50-60-86. Environmentally Sensitive Design and LID

4VAC50-60-90. Regional (watershed-wide) stormwater management plans. Repeal

4VAC50-60-93. Stormwater Management Plan Development

4VAC50-60-96. Watershed stormwater management plans

4VAC50-60-40. Applicability.

This part specifies stormwater management ~~technical~~ criteria for every stormwater management program and land-disturbing activity unless otherwise exempted in 10.1-603.8 B in order to protect the quality and quantity of state waters from the potential harm of unmanaged stormwater.

4VAC50-60-53. General Requirements

A. The natural, physical, chemical, and biological characteristics and functions of the receiving waters must be maintained, protected, or improved.

B. Properties and receiving waterways downstream of any land-disturbing activity shall be protected from sediment deposition, erosion and damage due to changes in runoff rate of flow and hydrologic characteristics, including but not limited to, changes in volume, velocity, frequency, duration, and peak flow rate of stormwater runoff in accordance with the minimum water quality and quantity standards set out these regulations.

1. Flooding and channel erosion impacts to receiving streams due to land-disturbing activities shall be measured at each point of discharge from the land disturbance and such determination shall include any runoff from the balance of the watershed which also contributes to that point of discharge.

2. If stream channel erosion or localized flooding is an existing predevelopment condition than the postdevelopment conditions shall be in accordance with § 4VAC50-60-63.

C. Stormwater management impoundment structures that are not covered by the Impounding Structure Regulations (4VAC50-20) shall be engineered for structural integrity during the 100-year storm event.

D. Riparian buffers for all regulated land disturbing activities shall be established, or existing buffers maintained, adjacent to surface waters.

4VAC50-60-56. Applicability of other laws and regulations

A. Construction or modifications of stormwater management facilities or channels shall comply with all applicable laws and regulations.

B. Land-disturbing activities shall comply with the Virginia Erosion and Sediment Control Law (§ 10.1-560 et seq. of the Code of Virginia) and attendant regulations.

C. Land-disturbing activities shall comply with the Chesapeake Bay Preservation Act where applicable (§ 10.1-2100 et seq. of the Code of Virginia) and attendant regulations.

4VAC50-60-63. Water Quality and Quantity

A. Land disturbing activities that are converting forested land must maintain predevelopment water quality and water quantity-related runoff characteristics and site hydrology. [IDEAL SITUATION; NEED TO PROTECT WATER QUALITY; HOW TO ACHIEVE?]

B. Land disturbing activities on lands that are not forested must reduce existing pollutant load by 20% to improve water quality and improve water quantity-related runoff characteristics and site hydrology such that stream channel erosion and localized flooding is reduced by satisfying the following design standards for flow rate capacity and velocity requirements for natural or manmade channels associated with the land-disturbing activity:

1. detain the water quality volume and to release it over 48 hours;

2. detain and release over a 24-hour period the expected rainfall volume resulting from the one year, 24-hour storm; and

3. reduce the allowable peak flow rate resulting from the 1.5, 2, and 10-year, 24-hour storms to a level that is less than or equal to the peak flow rate from the site assuming it was in a good forested condition, achieved through multiplication of the forested peak flow rate by a reduction factor that is equal to the runoff volume from the site when it was in a good forested condition divided by the runoff volume from the site in its proposed condition. [IMPROVE LANGUAGE]

C. Natural channel characteristics shall be preserved to the maximum extent practicable to protect water quality and quantity.

D. Improvements in water quality may be achieved by applying performance-based criteria or the technology-based criteria in the Virginia Stormwater Management Handbook.

E. BMPs not included in the Virginia Stormwater Management Handbook which target appropriate nonpoint source pollutants may be allowed at the discretion of the permit issuing authority provided calculations and scientific studies demonstrate pollutant reduction requirements.

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F. In an effort to reduce degradation, additional control measures may be required on a case-by-case basis to maintain and protect water quality and quantity. Examples of this may include but are not limited to the storage of fertilizers, pesticides, herbicides and other products harmful to water quality.

4VAC50-60-66. Runoff Characteristics

A. For purposes of computing runoff, all pervious lands in the site shall be assumed prior to development to be in good condition (if the lands are pastures, lawns, or parks), with good cover (if the lands are woods), or with conservation treatment (if the lands are cultivated); regardless of conditions existing at the time of computation.

B. Pre-development and post-development runoff characteristics and site hydrology shall be verified by physical surveys and calculations that are consistent with good engineering practices.

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4VAC50-60-73. Frequency

The specified design storms shall be defined as either a 1.5, 2, or 10-year 24-hour storm using the rainfall distribution recommended by the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) when using NRCS methods such as TR55.

4VAC50-60-76. Linear development projects

Linear development projects shall control post-developed stormwater runoff for flooding in accordance with a stormwater management plan or a watershed or regional stormwater management plan.

4VAC50-60-83. Stormwater management impoundment structure or facilities

A. Construction of stormwater management impoundment structures or facilities within tidal or nontidal wetlands and perennial streams, shall be avoided to the maximum extent practicable. Economic hardship is not sufficient reason to grant an exception from this requirement.

B. Stormwater management impoundment structures or facilities that drain or treat water from multiple development projects or from a significant portion of a watershed may be allowed in Resource Protection Areas defined in the Chesapeake Bay Preservation Act, provided that (i) the permit issuing authority has conclusively established that the location of the facility within the Resource Protection Area is the optimum location; (ii) the size of the facility is the minimum necessary to provide flood control, stormwater water quality treatment, or both; and, (iii) the facility must be consistent with a stormwater management program that has been approved by the Board.

C. Construction of stormwater management impoundment structures within a Federal Emergency Management Agency (FEMA) designated 100-year floodplain shall be avoided to the maximum extent practicable. When this is demonstrated to be unavoidable, all stormwater management facility construction shall be in compliance with all applicable regulations under the National Flood Insurance Program, 44 CFR Part 59.

D. Construction of stormwater management impoundment structures or facilities shall only occur in karst areas after a thorough geological study of the area has been conducted.

In karst areas where no features have been identified sediment traps and basins shall have impervious liners installed. Stormwater management impoundment structures or facilities or temporary erosion and sediment control measures shall be monitored for failures. Should failures occur immediate steps to re-establish appropriate measures shall be taken.

No adverse environmental impacts shall occur to any identified karst features and no permanent stormwater management impoundment structures or facilities or temporary erosion and sediment control measures will be constructed in karst features. Discharge of stormwater directly into a karst feature shall not be permitted unless all requirements are met for class 5 injection wells.

E. Safety measures shall be incorporated into the design of all stormwater management impoundment structures or facilities. These measures may include but are not limited to safety ledges, fencing, warning signs, antivortex devices, stadia rod indicating depth at the lowest point and outlet structures designed to limit public access.

F. Stormwater management impoundment structures or facilities shall be designed to minimize the propagation of insects, particularly mosquitoes, provided that design features proposed will not negatively impact the functions of the facility.

4VAC50-60-86. Environmentally Sensitive Design and LID

Persons responsible for land disturbing activities are encouraged to investigate the use of environmentally sensitive design and LID measures to address water quality, water quantity, runoff rate, and the frequency components of this regulation.

4VAC50-60-93. Stormwater Management Plan Development

A. A stormwater management plan for a regulated land disturbing activity shall apply these stormwater management criteria to the land disturbing activity as a whole. Hydrologic parameters shall reflect the total land disturbance and shall be used in all engineering calculations.

B. Individual lots in developments shall not be considered separate land-disturbing activities, but rather the entire development shall be considered a single land disturbing activity through a common plan of development.

C. The stormwater management plan shall include all sources of surface runoff and all sources of subsurface and groundwater flows converted to surface runoff, such as sump-pump flows.

4VAC50-60-96. Watershed stormwater management plans

A. The objective of a watershed stormwater management plan is to address the stormwater management concerns in a given watershed with optimal economy and efficiency. The result of advanced design and implementation will be a better integration of stormwater management facilities and practices with improved long-term performance in the affected watershed to address the needed water quality and quantity reductions setout in § 4VAC50-60-63. It is anticipated that the implementation of watershed stormwater management plans will not only help mitigate the impacts of new development, but should also provide for the remediation of erosion, flooding or water quality problems caused by existing development within the given watershed.

B. Localities are encouraged to develop watershed stormwater management plans which address water quality and quantity on a watershed-wide basis. State and federal agencies intending to develop large tracts of land are encouraged to develop or participate in watershed plans where practicable.

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